

WHAT IS CLAIMED IS:

1. A bootstrap capacitor charging circuit comprising:
a bootstrap capacitor;
a semiconductor switch controlled by a control terminal, the control terminal coupled to a source of charging current for the bootstrap capacitor, the switch having
5 two main terminals, the first main terminal coupled to the source of charging current and the second main terminal coupled to the bootstrap capacitor; and
a voltage regulator device having a regulation voltage and coupled to the control terminal of the switch, the switch turning off when a voltage across the capacitor approximately equals the regulation voltage of the voltage regulation
10 device, thereby limiting the charging current into the bootstrap capacitor.
2. The bootstrap capacitor charging circuit of claim 1, further comprising a dropping resistor coupled between the source of charging current and the control terminal of the semiconductor switch.
3. The bootstrap capacitor charging circuit of claim 1, wherein the voltage regulation device comprises a zener diode.
4. The bootstrap capacitor charging circuit of claim 1, wherein the semiconductor switch comprises a bipolar transistor.
5. The bootstrap capacitor charging circuit of claim 1, wherein the semiconductor switch comprises a MOSFET.
6. The bootstrap capacitor charging circuit of claim 1, wherein the semiconductor switch and zener diode are arranged in an IC.

7. The bootstrap capacitor charging circuit of claim 2, wherein the semiconductor switch, zener diode and resistor are arranged in an IC

8. A method for charging a bootstrap capacitor comprising:
providing a charging current for the bootstrap capacitor to a control terminal of a semiconductor switch, and providing the charging current through a conduction path comprising the main terminals of the semiconductor switch to the bootstrap capacitor;

turning the switch off to prevent charging current from flowing into the bootstrap capacitor when the bootstrap capacitor has reached a predetermined voltage; and

turning the switch on when the voltage of the bootstrap capacitor has fallen below the predetermined voltage.

9. The method of claim 8, wherein the steps of turning the switch off and on are controlled by a voltage regulation device fed with the charging current.

10. The method of claim 8, further comprising turning the switch off to conserve power and operate in a micropower mode.